



July 17, 2017

Mr. Kevin Larson  
On-Scene Coordinator  
U.S. Environmental Protection Agency, Region 7  
11201 Renner Boulevard  
Lenexa, Kansas 66219

**Subject: Citizen's Gas & Electric Geophysical Survey Summary  
Citizen's Gas & Electric Site, Council Bluffs, Iowa  
U.S. EPA Region 7 START 4, Contract No. EP-S7-13-06, Task Order No. 0112  
Task Monitor: Kevin Larson, On-Scene Coordinator**

Dear Mr. Larson:

On July 7, 2017, Tetra Tech, Inc. completed a geophysical survey of the Citizen's Gas & Electric site in Council Bluffs, Iowa. Survey activities were completed by Ground Penetrating Radar Systems, Inc. (GPRS). Tetra Tech was joined on site by Jeff Pritchard, EPA On-Scene Coordinator, Tara Regan and Lester Campbell with Black Hills Energy Corporation, and Jonathan Deputy with GPRS.

The geophysical survey included marking the approximate boundary of a tar well associated with the former manufactured gas plant (FMGP) as well as marking subgrade utilities and pipelines. The survey was conducted with a Geophysical Survey Systems, Inc. (GSSI) SIR 4000 Ground Penetrating Radar system. Utility locates were also conducted using a SPX RD8100 "wand." Following the survey, GPS coordinate data were recorded for all marked utilities and the approximate location of the FMGP tar well. Attached is a photo log documenting site conditions (Attachment A) as well as a summary report of the survey provided by GPRS that includes figures of all marked positions (Attachment B).

If you have any questions or comments, please contact the project manager at (816) 412-1777.

Sincerely,

A handwritten signature in black ink, appearing to read 'Joshua Mellema'.

Joshua Mellema  
START Project Manager

Attachments:

A – Photo Log

B – GPRS Summary Report

Enclosure

cc: Debra Dorsey, EPA START Project Officer  
Jeff Pritchard, EPA On-Scene Coordinator

**ATTACHEMENT A**

**PHOTO LOG**

**Citizen's Gas & Electric  
Council Bluffs, Iowa**



<b>TETRA TECH PROJECT NO. 103X9025160112</b>  Direction: North	<b>DESCRIPTION</b>	Geophysical survey subcontractor, Ground Penetrating Radar Systems, Inc. (GPRS).	1
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	J. Mellema	7/7/2017



<b>TETRA TECH PROJECT NO. 103X9025160112</b>  Direction: West	<b>DESCRIPTION</b>	Marked utility line in northwest corner of property.	2
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	J. Mellema	7/7/2017



**Citizen's Gas & Electric  
Council Bluffs, Iowa**



<b>TETRA TECH PROJECT NO. 103X9025160112</b>  Direction: Northwest	<b>DESCRIPTION</b>	Approximate location of tar well associated with former manufactured gas plant (FMGP).	3
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	J. Mellema	7/7/2017



<b>TETRA TECH PROJECT NO. 103X9025160112</b>  Direction: West	<b>DESCRIPTION</b>	Marked utility line in southwest corner of property.	4
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	J. Mellema	7/7/2017

# Citizen's Gas & Electric Council Bluffs, Iowa



<b>TETRA TECH PROJECT NO.</b> 103X9025160112  <b>Direction:</b> South	<b>DESCRIPTION</b>	Material staging yard on east half of property.	5
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	J. Mellema	7/7/2017



<b>TETRA TECH PROJECT NO.</b> 103X9025160112  <b>Direction:</b> North	<b>DESCRIPTION</b>	Gas pipeline access.	6
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	J. Mellema	7/7/2017



**Citizen's Gas & Electric  
Council Bluffs, Iowa**



<b>TETRA TECH PROJECT NO. 103X9025160112</b>  Direction: Northwest	<b>DESCRIPTION</b>	Gas pipeline pressure step-down.	7
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	J. Mellema	7/7/2017



<b>TETRA TECH PROJECT NO. 103X9025160112</b>  Direction: North	<b>DESCRIPTION</b>	Marked utility lines near pipeline access.	8
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	J. Mellema	7/7/2017

**Citizen's Gas & Electric  
Council Bluffs, Iowa**



<b>TETRA TECH PROJECT NO.</b> 103X9025160112  Direction: East	<b>DESCRIPTION</b>	GPR and wand equipment.	9
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	J. Mellema	7/7/2017



<b>TETRA TECH PROJECT NO.</b> 103X9025160112  Direction: Northeast	<b>DESCRIPTION</b>	Marked utility lines on east portion of site.	10
	<b>CLIENT</b>	U.S. Environmental Protection Agency Region 7	Date
	<b>PHOTOGRAPHER</b>	J. Mellema	7/7/2017

**ATTACHEMENT B**

**GPRS SUMMARY REPORT**





<i>For</i>	TETRATECH	<i>Project Location</i>	
<i>Name</i>	JOSHUA MELLEMA		
<i>Title</i>	ENVIROMENTAL SCIENTIST		
<i>Phone</i>	(816) 217-6413		
<i>Fax</i>	(816) 410-1748		
<i>Email</i>	<a href="mailto:JOSH.MELLEMA@TETRATECH.COM">JOSH.MELLEMA@TETRATECH.COM</a>		

<i>Purpose</i>	
<p>The purpose of this project was to locate underground utilities and also identifying the boundaries of a tar well. All utilities located were marked on the surface with paint and flagged where possible.</p>	

<i>Process</i>	
<p>Our process begins with collecting scans with GPR across the area in a grid pattern with a 400 Mhz antenna on approximately a 20 ft spacing North and South and approximately 30-40 ft spacing East and West. The GPR data is interpreted in real time and anomalies in the data are located and marked on the surface with paint. We found that the soil allowed for GPR depth penetration of 3 feet-4 feet in most areas. The RD8100 is used to locate pipes or utilities throughout the scan area to provide a greater understanding of the data collected with GPR.</p>	

<i>Overview</i>	

<i>By</i>	Ground Penetrating Radar Systems, Inc.	
<i>Name</i>	Jon Deputy	
<i>Title</i>	Area Manager	Respectfully, Jonathan Deputy
<i>Phone</i>	402.506.0815	
<i>Fax</i>	419.843.5829	
<i>Email</i>	<a href="mailto:jon.deputy@gp-radar.com">jon.deputy@gp-radar.com</a>	

